

Multilayer High Speed Transient Voltage Surge Suppressor

Description

The newest multilayer High-Speed JH series is an advanced device of *JumboTek's* Multilayer Ceramic Transient Voltage suppression family. JH series provides protection from the Electrostatic Discharge (ESD) and EFT (Electrical Fast Transient) in high-speed data-line and other high frequency applications. *JumboTek's* new JH series, specifically characterized for extra low capacitance (1.5pF, 3pF, 5.6pF & 12pF), permits usage in analog and digital circuits where it will not distort or attenuate the desired data signal. Its small size is ideal for used in high-density printed circuit board, offering a new choice to High-speed data transmission and Radio Frequency (RF) circuits. It is well applied to suppress ESD events including those specified in IEC 61000-4-2 or other standards used for ElectroMagnetic Compliance (EMC) testing, and also compatible with modern reflow and wave soldering procedures.

Features

- Ultra low capacitance : 1.5pF 、 3pF 、 5.6pF&12pF
- Able to withstand ESD test of IEC 61000-4-2
- Small size: 0402, 0603
- Inherently bi-directional clamping characteristic
- Operating voltage range $V_{M(DC)}$: $\leq 5.5V$, $\leq 18V$
- $-55^{\circ}C \sim 125^{\circ}C$ operating temperature range
- Available with Nickel / Tin end terminations

Applications

- Portable/Hand held Products: Cellular phones, PDA, Notebook PC...etc.,
- Universal Serial Bus (USB)
- Data, Diagnostic I/O ports
- Video & Audio ports
- Mobile communications
- Computer/DSP products
- Industrial instruments and High-Speed Data Line

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Absolute Maximum Ratings

Continuous:	High-Speed SERIES	UNITS
Steady State Applied Voltage :		
DC Voltage Range ($V_{M(DC)}$) :		
JH0402ML050E.....	≤ 5.5	V
JH0402/0603ML050H.....	≤ 5.5	V
JH0603ML050J.....	≤ 5.5	V
JH0402/0603ML180H/J/W.....	≤ 18	V
Operating Ambient Temperature Range (T_A)	-55 to 125	$^{\circ}C$
Storage Temperature Range (T_{STG})	-55 to 150	$^{\circ}C$

Test Method / Description

Characteristics	Test Method / Description
Standard Test condition	Environmental condition under which every measuring is done without doubt on the measuring results. Unless specially specified temperature, relative humidity are 5 to 35 $^{\circ}C$, 45 to 85% RH.
Max. Working Voltage ($V_{M(DC)}$)	Maximum steady-state DC operating voltage the device can maintain and typical leakage current at 25 $^{\circ}C$ not exceed 25 μA . The operating voltage (working voltage) is always less than the breakdown voltage (nominal voltage) of the device.
Nominal Voltage ($V_{N(DC)}$)	With the specified measuring current of 1mA DC applied and has a specified minimum and maximum voltage listed.
Max. Clamping Voltage (V_C)	Maximum peak voltage across the device measured at a specified pulse current (A) and waveform 8/20 μs .
Surge Current (I_{TM})	Maximum peak current may be applied with the specified waveform without device failure.
Energy Absorption (W_{TM})	Maximum energy may be dissipated with a specified waveform without device failure.
Typical Capacitance (C)	Device Capacitance measured with zero voltage bias 1V _{P.P.} and frequency 1MHz
IEC 61000-4-2	The electrostatic discharge requirements portion of the electromagnetic compatibility standard written by the International Electro technical Commission. The specification describes a specific human body model test conditions and methods.
ESD Test (Contact discharge)	Test Voltage: 8 KV Type of discharge: direct contact discharge Number of test pulses: 20 times Polarity: + / - Discharge network: 150pF, 330 Ω Preconditioning: IR reflow soldering on test PCB $\Delta V/V \leq \pm 15\%$ (IEC 61000-4-2)
ESD Test (Air discharge)	Test Voltage: 15 KV Type of discharge: air discharge Number of test pulses: 20 times Polarity: + / - Discharge network: 150pF, 330 Ω Preconditioning: IR reflow soldering on test PCB $\Delta V/V \leq \pm 15\%$ (IEC 61000-4-2)

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High Speed Series (Ultra Low Capacitance)



Device Ratings and Specifications

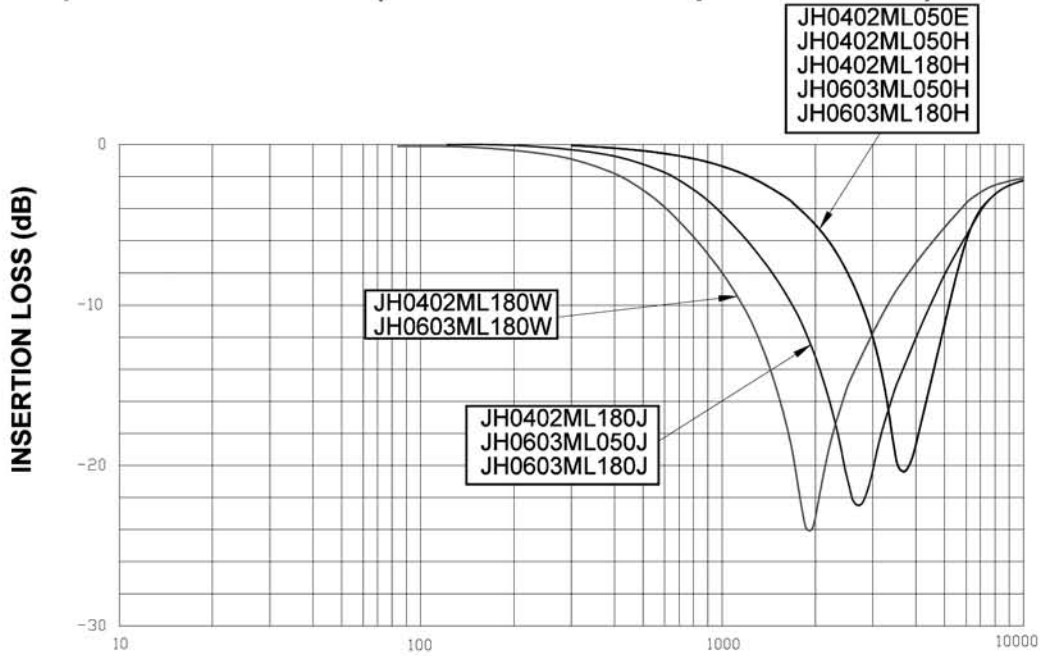
PART NUMBER	Maximum Ratings (125°C)		Performance Specifications (25°C)			
	Maximum Working Voltage	Max. Non-Repetitive Surge Energy (10/1000µs)	Maximum Clamping Voltage at 1A (8/20µs)	Maximum ESD Clamp Voltage 8KV Contact (Notes 1)	Typical Capacitance @1 MHz (Notes 2)	Typical Inductance (from Impedance Analysis)
	$V_{M(DC)}$ (V)	W_{TM} (J)	V_c (V)	V_c (V)	C (pF)	L (nH)
JH0402ML050E□	5.5	0.010	150	<350	1.5±0.5	<1.0
JH0402ML050H□	5.5	0.010	135	<300	3.0	<1.0
JH0402ML180H□	18	0.010	135	<300	3.0	<1.0
JH0402ML180J□	18	0.020	110	<150	5.6	<1.0
JH0402ML180W□	18	0.020	65	<120	12.0	<1.0
JH0603ML050H□	5.5	0.010	135	<300	3.0	<1.0
JH0603ML050J□	5.5	0.020	110	<150	5.6	<1.0
JH0603ML180H□	18	0.010	135	<300	3.0	<1.0
JH0603ML180J□	18	0.020	110	<150	5.6	<1.0
JH0603ML180W□	18	0.020	65	<120	12.0	<1.0

Notes:

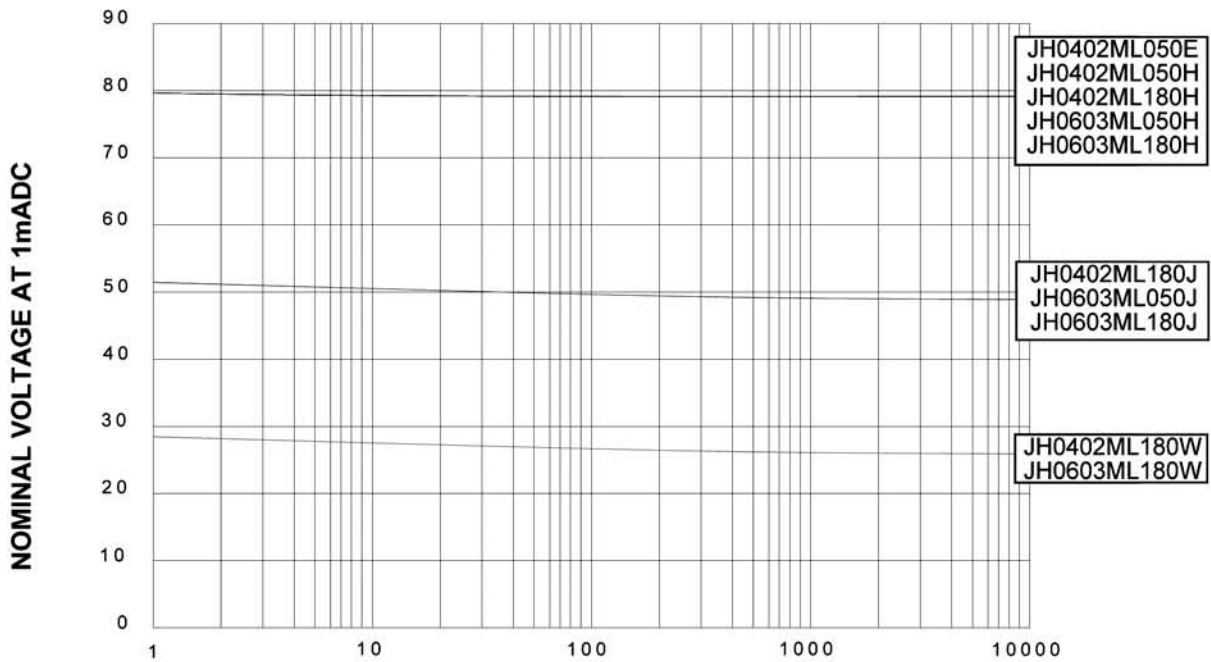
1. Maximum ESD clamp voltage tested with IEC 61000-4-2 Human Body Model discharge test circuit and direct discharge to device terminals (IEC preferred test method) .
2. Capacitance may be customized, please contact factory for availability.

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INSERTION LOSS (S21) CHARACTERISTICS



NOMINAL VOLTAGE STABILITY TO MULTIPLE ESD IMPULSES (8KV CONTACT DISCHARGES PER IEC 61000-4-2)



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information ?*

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